

REMARKS

The Office Action of April 15, 2010 has been carefully studied. The following paragraphs correspond to the order of the paragraphs of the Office Action:

Claim Rejections - 35 U.S.C. 112

It is seen that claim 1 now specifies that the effluent is from the isomerization unit and that the expression "a mixture of this hydrocarbon" is changed to --a mixture of said scavenging gas--. Furthermore, claim 1 is now specifically directed to the use of a scavenging gas comprising a portion of the flow G and hydrogen. (The flow G is set forth in step (b) as comprising a majority of normal hexane and mono-branched C6 paraffins.) Thus, this flow, in part is recycled directly to the isomerization unit and another part passes to the membrane unit as a flushing gas, from which it is then recovered and also passed to the isomerization unit.

It is further seen that one added independent claim is added which is directed to (10) an incondensable gas that comprises hydrogen or methane or ethane, and then in another added independent claim (11) a gas rich in hydrogen directly supplies the isomerization unit from the outlet of the membrane unit.

Thus, there are now three independent claims.

Referring now to the rejection over the prior art, it is respectfully submitted that one of ordinary skill in this old and crowded art of petroleum refining would not have found Applicants' invention to be obvious in the absence of the present disclosure. In support of this contention, the following discussion is respectfully submitted:

Zarchy et al. U.S. 5,245,102

This patent, though having certain similarities to Applicants' process is based on the use of a conventional pressure swing adsorption separation (PSA), from which an extract stream is recovered as the n-pentane recycle stream.

Though very conventional, PSA-type processes require a relatively high investment on the one hand, and because of the complexity of the operation, significant maintenance expenses

are also required. (Applicants' specification, paragraph bridging pages 4 and 5). Applicants also point out other disadvantages of the PSA process on page 5, first and second complete paragraphs. Thus, Applicants have provided an improvement over a long standing process wherein it was thought that the PSA system was perfectly acceptable.

To attempt to demonstrate the obviousness of Applicants' invention, a reference utilizing a membrane process is employed in the Office Action, namely Ragil et al. U.S. 6,156,950. It is to be noted that this reference is owned by the same assignee of the present invention, namely Institut Francais du Petrole, a well-known French petroleum research organization, and that the U.S. patent is based on a French priority application filed November 25, 1997, many years before the present invention came to fruition. Furthermore, Ragil et al. is directed to a process for separating a C5-C8 feed into three effluents whereby the separating process utilizes at least two separation units operating either by adsorption or by permeation with a membrane. There is, moreover, nothing in this patent which suggests that a scavenging gas be produced by the process itself, noting Applicants' claim 1, for example wherein the scavenging gas utilizes a mixture of hydrocarbons which are withdrawn either laterally or at the bottom of a deisohexanizer (E).

Also, in the reference, where there is a feed comprising a C5 cut, isopentane is not separated from mono-branched paraffins (column 6, lines 15-22). Instead, a deisopentanizer must be disposed upstream and/or downstream of the different separation units (lines 15-20, column 8, and lines 61-67, column 10, lines 1-8, column 11). In contrast, Applicants do not require a deisopentanizer in order to separate normal pentane from isopentane. These differences are striking and, by themselves, render Applicants' membrane separation, by itself, unobvious over the teachings of Ragil et al.

Much less is there any suggestion, in the absence of Applicants' disclosure, to substitute any type of membrane separation for the PSA system of Zarchy et al. Continuous systems are just too complex for a rational suggestion of a modification of Zarchy et al. without a reasonable expectation of success. Moreover, the patent law makes it clear that modifications suggested by the Examiner do not make the modification obvious unless the prior art suggests the desirability of the modification *In re Dow Chemical Company*, 837 Fd.2d 469, 473 Fed. Cir. (1988).

In the final analysis, Applicants have developed a sophisticated improved process which would not have been obvious to those of ordinary skill in the art in the absence of Applicants' disclosure. Accordingly, reconsideration is courteously requested.

If, for any reason, the Examiner believes that the claims must be modified in order to establish patentability, the Examiner indulgence would be highly appreciated by telephoning Counsel at the number indicated below. If, however, Counsel is unavailable, please telephone Ms. Richardson at 703-812-5326, and she will enlist the services of another attorney.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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Attorney Docket No.: PET-2242

Date: July 14, 2010

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